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ABSTRACT

This paper demonstrates a grade server that allows college students to access their grades over the Internet from the instructor's home page. Using a CGI (common gateway interface) program written in Visual Basic, the grades are read directly from an Excel spreadsheet and presented to the requester after he/she enters a password. The grade for each quiz, assignment, test, etc. is presented along with the class average and rank for each. Student feedback has been positive. Highlights include how to use and set up the grade server, how the grade server is implemented, and how it can be modified to allow for different spreadsheet formats other than Excel. The configuration file and the source code of the main module are provided, and sample screen displays are included. (AEF)

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Serving Grades Over The Internet

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Introduction:

Many times bewildered students have entered my office claiming no knowledge of their grades and leave looking shocked. To keep this from happening (at least in my office), I have created a grade server, allowing students to access their grades over the Internet from my home page. Using a CGI program written in Visual Basic, the grades are read directly from an Excel spreadsheet and presented to the requester (after entering a password). The grade for each quiz, assignment, test, etc. is presented along with the class average and rank for each. This way the student knows exactly where they stand in the class which is especially useful when the grades are curved. In this paper, I demonstrate the grade server, show how it is implemented, and show how it can be modified to allow for different spreadsheet formats other than Excel.

The Grade Server:

In this section, I explain how to use and set up the grade server (in case you would like to use it yourself). The software and instructions are downloadable from my web page at okra.fmarion.edu. First, the spreadsheet must be set up in a specific format. The spreadsheet below acts as a guide.

Password	Name	Quiz1	Quiz2	Quiz Avg	Midterm	Final	Grade
400801	Bauer,Linda						
764311	Black,Ben						
989519	Jones,Ralph						
698390	Smith,Deon						
	Average						

The headings should be in the first row. The first heading in column 1 should be "Password". This acts as the password for the students to access their grades. Any alphanumeric string can be used for the password, although I chose six digit numbers (which are strings!). The names should be entered lastname, firstname with no space after the comma. The last row in the name column should have the name "Average" to be used to show the average grade for each quiz, assignment, etc. Only those columns with an average are displayed on the grade server. The column headings that follow "Name" are of your choosing. The cells of the spreadsheet that contain the information you want displayed should be a named range and the name should be "Grades". The spreadsheet file can be saved anywhere on your hard drive under any file name.

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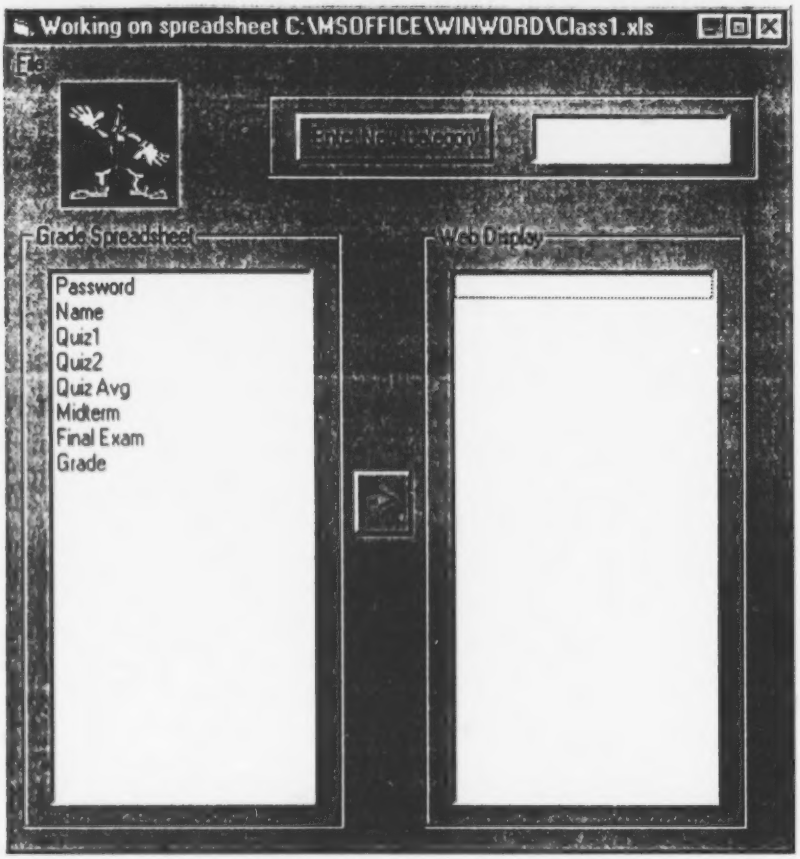
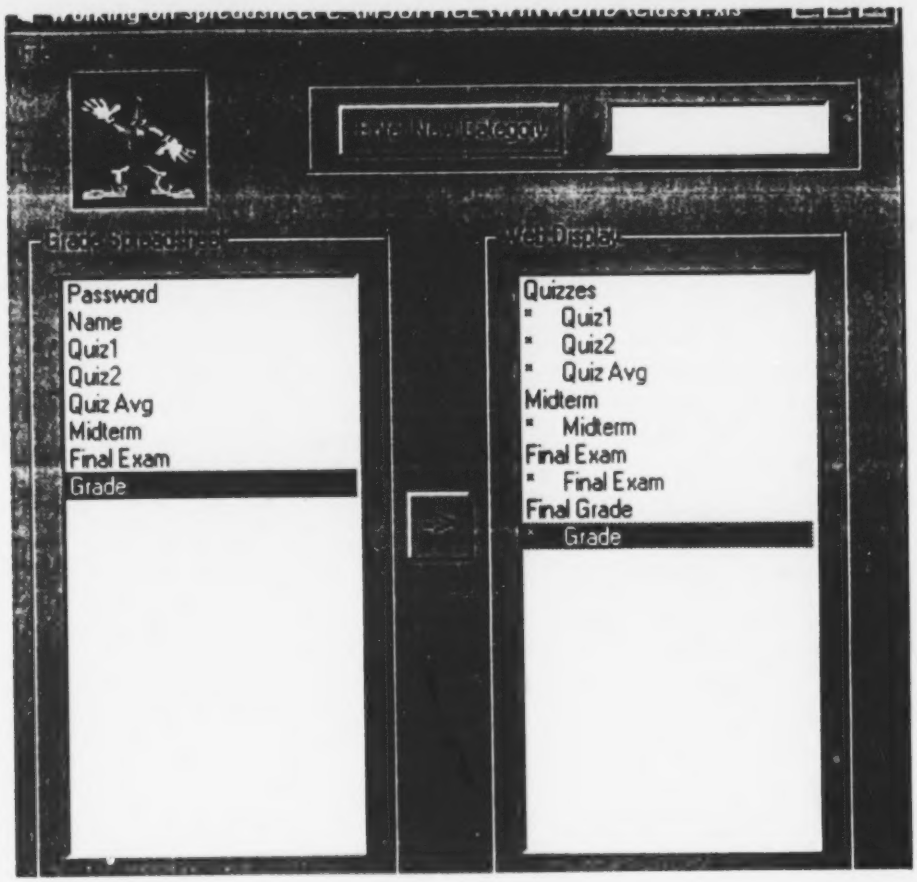
After the template for the spreadsheet is created, the program "gradecfg.exe" is executed. The graphic below shows the program after loading the spreadsheet file.



The spreadsheet file is loaded into the configuration program (as shown above). You can choose which columns you want to display and categorize them. The graphic below shows the window after the choices are made.



The configuration file is saved into the directory \httpd\Cgi-Win. The filename should be either grades1.cfg, grades2.cfg, grades3.cfg, or grades4.cfg (there are 4 classes supported per server). A copy of the configuration file is shown below.

"C:\MSOFFICE\WINWORD\class1.xls"
"Excel 5.0;"
"Quizzes"
"* Quiz1"
"* Quiz2"
"* Quiz Avg"
"Midterm"
"* Midterm"
"Final Exam"
"* Final Exam"
"Final Grade"
"* Grade"

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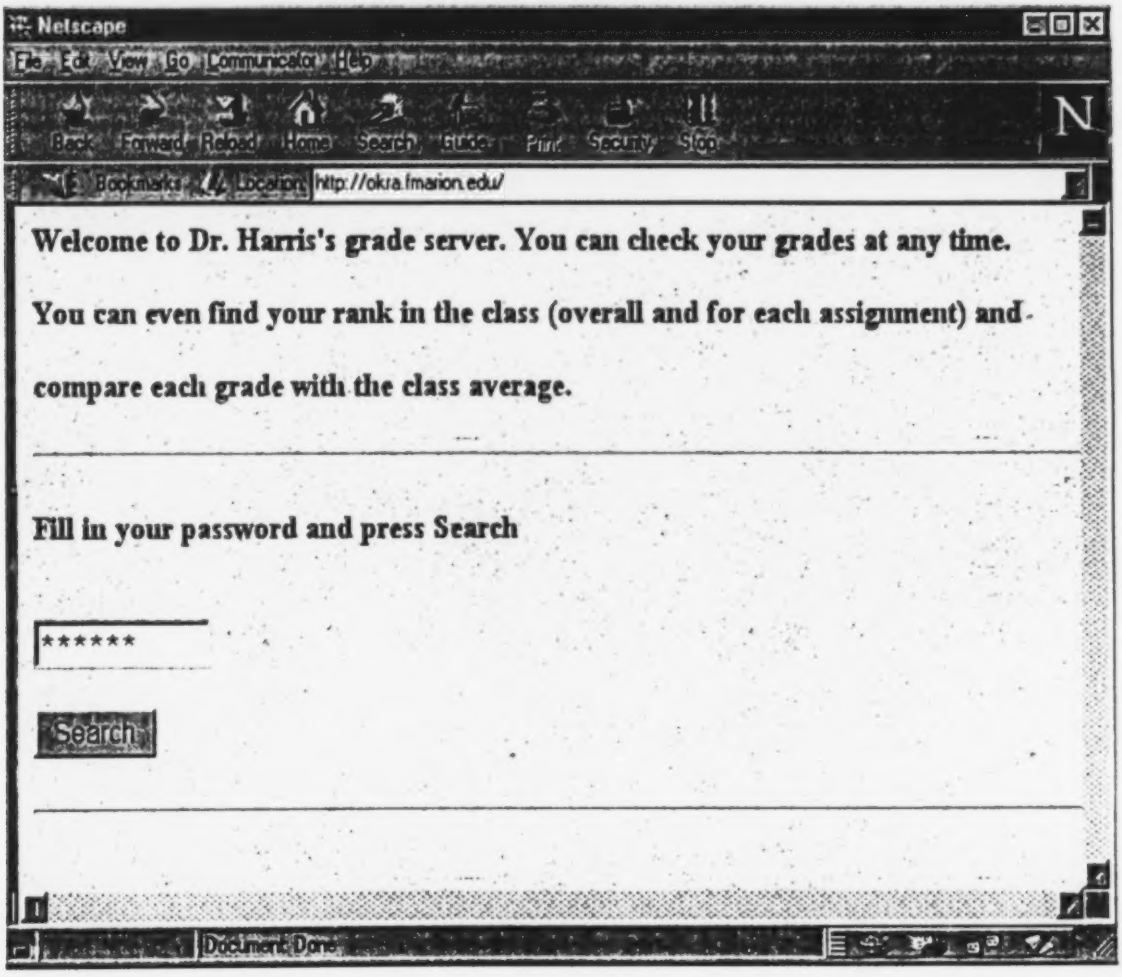
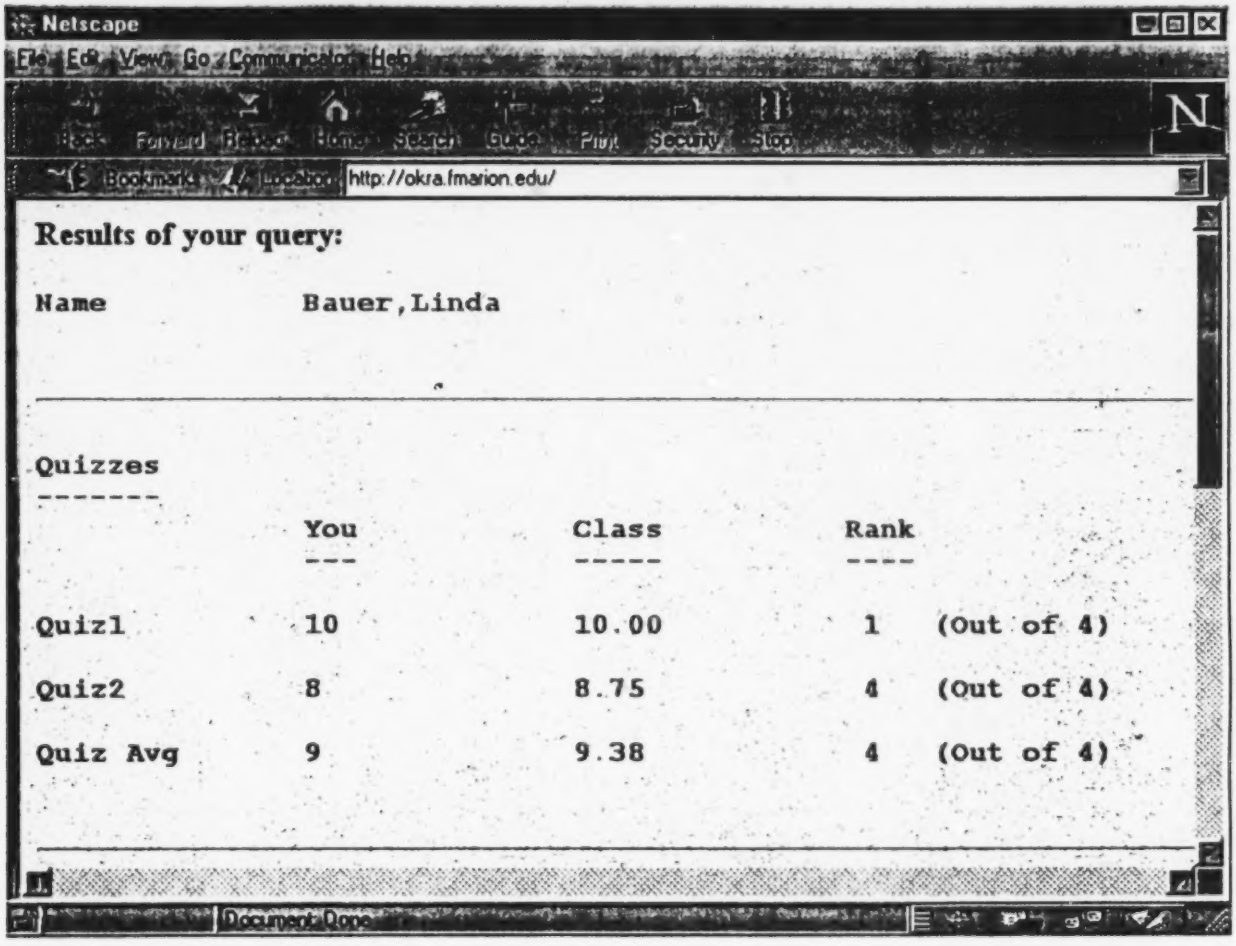
The line "Excel5.0" can be changed in the configuration file to "dBASE III;", "dBASE IV;", "dBASE 5.0;", "Paradox 3.x;", "Paradox 4.x;", "Paradox 5.x;", "FoxPro 2.0;", "FoxPro2.5;", "FoxPro 2.6;", "Excel 3.0;", "Excel 4.0;", "Excel 97;", "HTML Import;", "HTML Export;", "Text;", or "ODBC;" to provide for different formats.

The last step is to copy the CGI program into the \httpd\Cgi-Win directory (either grades1.exe, grades2.exe, grades3.exe or grades4.exe). The program can be executed from any web browser by typing in the URL your-url\cgi-win\grades1.exe (or grades2.exe or grades3.exe or grades4.exe) or a link can be provided (see my web page under "virtual classroom").

When the CGI-win program is executed, a password screen appears:


Netscape
File Edit View Go Communicator Help
Back Forward Reload Home Search Guide Print Security Stop
Bookmarks Location http://okra.fmarion.edu/
Welcome to Dr. Harris's grade server. You can check your grades at any time.
You can even find your rank in the class (overall and for each assignment) and compare each grade with the class average.
Fill in your password and press Search
******
Search
Document Done

After the password is entered, it is checked against the password in the spreadsheet file, the grades are read from the spreadsheet and displayed on the following screen.


Netscape
File Edit View Go Communicator Help
Back Forward Reload Home Search Guide Print Security Stop
Bookmarks Location http://okra.fmarion.edu/
Results of your query:
Name Bauer,Linda
Quizzes
You Class Rank
Quiz1 10 10.00 1 (Out of 4)
Quiz2 8 8.75 4 (Out of 4)
Quiz Avg 9 9.38 4 (Out of 4)
Document Done

Implementation:

The CGI (common gateway interface) program was written in Visual Basic 5.0. The public domain program CGI32.BAS needs to be included as a module. CGI32.BAS provides the functions necessary to interface the Visual Basic program with the HTML server. The source code for the main module is explained below.

```
'** GRADE searchable database
'** Written by Jim Harris
'** The subroutine CGI_Main() is called when the CGI program is called from the browser
```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```
Sub CGI_Main()
      SendReQuest
      Exit Sub
End Sub


'** The subroutine Inter_Main() is not used, but its existence is necessary

Sub Inter_Main()
End Sub

'** The subroutine SendRequest is called by CGI_Main()
'** SendRequest() outputs the web page asking the user to enter their password
'** It uses the "Send" function provided by the module CGI.BAS to send the HTML out to
'** the browser that ran the CGI program.

Sub SendReQuest()

   Send ("Content-type: text/html")
   Send ("")
   Send ("<HTML><HEAD><TITLE>" & "See your grades!!" & "</TITLE></HEAD>")
   Send ("<BODY BACKGROUND = ""/images/back.gif"">")

  ' ** The SendRequest() function must send a form to the requesting browser
   '** ACTION points back to this program.  This  program executes after the requester
   '** submits the form

   Send ("<FORM METHOD=""POST"" ACTION=""/cgi-win\grades1.exe"">")
   Send ("<h3>Welcome to Dr. Harris's grade server.  You can check your grades at any time.")
   Send ("<h3>You can even find your rank in the class (overall and for each assignment) and")
   Send ("<h3>compare each grade with the class average.</h3>")
   Send ("<HR>")
   Send ("<h3>Fill in your password and press Search</h3>")
   Send ("<br>")
   Send ("<INPUT SIZE=10 TYPE=""PASSWORD"" NAME=""password"">")
   Send ("<br>")
   Send ("<br>")
   Send ("<INPUT TYPE=""submit""")
   Send ("VALUE=""Search"">")
   Send ("")
   Send ("</FORM>")
   Send ("<HR>")
   Send ("</H3>")
   Send ("</BODY></HTML>")
End Sub
```

```
'** SendResults() is executed after the form is submitted back to the CGI program

Sub SendResults()

   Dim Db As Database
   Dim tmpDyna As Recordset        '** A tmpDyna stores the result of a query
   Dim tmpDyna2 As Recordset
   Dim tmpDyna3 As Recordset
   Dim query As String
   Dim SQLQuery As String
   Dim temp As Single
   Dim stemp, stemp1, stemp2 As String

   '**Reading in the configuration file

   Open "grades1.cfg" For Input As #123
   Input #123, gradeFile$
   Input #123, GradeFileType$

   '** Getting the password field
   '** The function GetSmallField returns the value from the form that is submitted
   '** GetSmallField is a function provided by the module CGI32.BAS.

   query = GetSmallField("password")

   '** Sending out the HTML response
   Send ("Content-type: text/html")
   Send ("")
   Send ("<HTML><HEAD><TITLE>" & "Grades Database" & "</TITLE></HEAD>")
   Send ("<BODY BACKGROUND = ""/images/back.gif"">")
   Send ("<H3>")

   '** Opening the database (which is actually an Excel File)
   Set Db = OpenDatabase(gradeFile$, False, True, GradeFileType$)

   '** Doing the query
   SQLQuery = "SELECT * FROM Grades WHERE Password= " & "'" & query & "'"
   Set tmpDyna = Db.OpenRecordset(SQLQuery)

   '** Checking the results of the query
   If tmpDyna.RecordCount = 0 Then     'Can't find password
      Send ("Your password was not found.<br><br>")
   Else
      Send ("Results of your query: <br><br>")
      Send ("<PRE>")
```

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```
' ** One of the Password fields in the spreadsheet file must be called Average

SQLQuery = "Select * FROM Grades WHERE Name = 'Average'"
Set tmpDyna2 = Db.OpenRecordset(SQLQuery)

'** Reading in all records in order to calculate the rank

SQLQuery = "SELECT * FROM Grades"
Set tmpDyna3 = Db.OpenRecordset(SQLQuery)
tmpDyna3.MoveLast
s3$ = ""

'** Reading in the fields from the configuration file

Do While Not (EOF(123))        '** Send the results back
 Input #123, s$
 If s$ <> "" Then
  If Left$(s$, 1) = "*" Then     '**     * means an actual field
    s$ = Right$(s$, Len(s$) - 6)
    x = tmpDyna(s$)
    y = tmpDyna2(s$)
    s3$ = ""

   '** Checking the data type of the entry in the spreadsheet cell

  If TypeName(x) = "Null" Then
     s1$ = ""
    ElseIf TypeName(x) = "String" Then
     s1$ = x
    Else
     temp = x

     '** Getting the rank for the number

     rank = 1
     tmpDyna3.MoveFirst
     tmpDyna3.MoveNext

     Rcount = 0
     For i = 1 To tmpDyna3.RecordCount - 3
      z = tmpDyna3(s$)
      If TypeName(z) <> "Null" Then
       Rcount = Rcount + 1
       If z > x Then
        rank = rank + 1
       End If
```

```
        End If
        tmpDyna3.MoveNext
      Next i
      s3$ = Str$(rank)
      S4$ = Str$(Rcount)

      s1$ = Format(temp, "###0")
    End If

    '** Doing the same for the averages

    If TypeName(y) = "Null" Then
      s2$ = ""
    ElseIf TypeName(y) = "String" Then
       s2$ = y
       If s2$ = "Average" Then s2$ = ""
    Else
      temp = y
      s2$ = Format(temp, "###0.00")
    End If
    a$ = "              "

     '** Formatting the output

    If s$ <> "Name" Then
      sendString = s$ + Left$(a$, 15 - Len(s$)) + s1$ + Left$(a$, 15 - Len(s1$)) + s2 +
     Left$(a$, 15 - Len(s2$)) + s3$ + Left$(a$, 3) + "(Out of" + S4$ + ")"
    Else
      sendString = s$ + Left$(a$, 15 - Len(s$)) + s1$ + Left$(a$, 15 - Len(s1$)) + s2 +
      Left$(a$, 15 - Len(s2$)) + s3$ + Left$(a$, 3)
    End If
    If TypeName(y) <> "Null" Then Send (sendString)
  Else
    Send ("<HR>")
    Send (s$)
    s2$ = "----------------------------------------"
    s2$ = Left$(s2$, Len(s$))
    Send (s2$)
    Send ("          You        Class       Rank")
    Send ("          ---        -----       ----")
  End If
 End If
 Send ("<br>")
Loop
End If
Close #123
```

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```
'** Closing out the HTML
Send ("</pre>")
Send ("</H3>")
Send ("<br>")
Send ("</BODY></HTML>")
Db.Close

End Sub
```

Conclusions:

I have used this grade server for one semester and the students like it. They have access to their grades as soon as they are entered into the spreadsheet. This also removes the need for posting grades after final examinations. The source code and executables are available at the URL http://okra.fmarion.edu under okraboy software.

References

1. "Visual Basic 4 Unleashed", Conrad Scott, Brad Shannon, Frank Font, and Bill Hatfield, Sams Publishing ,1995.

2. "Microsoft Visual Basic Web Database Interactive Course", Gunnit S. Khurana and Satwant S. Gadhok, Waite Group Press, 1997.